

Eduardo Hernández Valdez

eduarch42@protonmail.com |  /eduardohdz42 |  /saucesaft |  Citizen of Mexico |  14/04/2004

EDUCATION

ITESM Av. Eugenio Garza Sada 2501 Sur, Tecnológico, 64700 Monterrey, N.L.

Mexico

Engineering in Robotics and Digital Systems; Avg 92/100 - GPA 3.6

August 2022 - June 2026

RESEARCH EXPERIENCE

Joint Robotics Laboratory (JRL) @ CNRS-AIST

Tsukuba, Japan

Research Intern - Humanoid Robotics, targeting IROS 2026

Aug 2025 - Feb 2026

- Developing force-sensitive **tactile matrix** for humanoid robot **teleoperation** and dexterous manipulation
- Implementing **embedded neural networks** to eliminate analog sensor crosstalk in real-time
- Custom **DMA-based TCP/IP stack** development
- Planning to investigate **reinforcement learning** and **foundation models** approaches for grasping in **MuJoCo**

FLOWMAS: Multimodal Flow Matching for Trajectory Generation

Mty, Mexico

Independent Research Project - Submitted to System Integration 2026

Sep 2025

- Designed **multimodal CNF model** with spatial memory for RGBD-conditioned trajectory synthesis
- Training architecture using **Hydra**, **OmegaConf** for custom models with **modality-specific data logging**

Self Driving Vehicle @ VantTec

Mty, Mexico

Computer Vision, Embedded and Electronics R&D Team Leader

Jan 2023 - June 2025

- End-to-end local planner of **autonomous vehicles using generative flow models**. **ICRA2025 Poster**
- Built **custom visualization tools using Rerun** for real-time trajectory analysis
- **PCB design** for interfacing with existing electromechanical systems
- Embedded programming of **steering wheel and braking pedal control**

Unmanned Surface Vehicle @ VantTec

Mty, Mexico

Perception R&D Team Leader

Aug 2022 - February 2025

- On the edge object detection inference ecosystem based on **TensorRT**
- **Stereo camera image triangulation** to estimate distance from 2D bounding boxes to a 3D point
- Configured **Linux systems, Docker environments, and hardware drivers** for our vehicle's infrastructure

PROJECTS

Embedded EKF for Pose Estimation - Drone interfacing microcontroller running filters on sensor readings

Camera Calibration - **CUDA accelerated** camera extrinsic and intrinsic calibration and rectification for lab showoff

Tensorgba - **CNN** interfacing with Gameboy Advance games. (Self-driving Mario Kart)

ML Teaching - Designed and delivered **machine learning curriculum** for high school students

WORK EXPERIENCE

Computer Vision Intern - Advanced Solutions Lab @ AMI Automation

May 2025 - November 2025

- **SIMD** optimization, integration and research of computer vision algorithms for the **industry**

Freelance General Purpose Programming - fiverr.com/eduarch42

Summer 2019, 2020, 2021, 2022

- Developed solutions in **Data Science**, Backend Development, GUI Applications, with an overall 4.9/5 rating

AWARDS & ACHIEVEMENTS

Xignux Challenge 2024 - Top-3 National - Technology entrepreneurship proposal with a focus on sustainability

Roboboat 2024 - Finalist Team - Perception system of an autonomous boat

HackMTY 2022 Hackathon - 1st Place - Hardware box designed to store online identity & cryptocurrencies

SKILLS

Programming: *Proficient;* Python, Go. *Intermediate;* C, C++, Rust, JavaScript, Matlab. *Beginner;* VHDL, Julia

Technologies/Software: Linux, Docker, Shell scripting, Pytorch, Tensorflow, TF-Lite, Keras, TensorRT, ONNX, GDB, GCC, (C)Make, Git, KiCAD, ROS[1,2], FreeCAD, OpenCV, YOLO, STM32, Teensy, RVIZ, Rerun, Hydra, OmegaConf, Simulink, FreeRTOS, CAN, Ethernet, NVIDIA Jetson, System Integration, Edge Computing, Buildroot, U-Boot

Languages: Spanish (Native), English (B2 - PTEG), Japanese (Learning), German (Elementary)